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#### The Creation of Moon: Comparative Analysis of Modern Sciences and Religious Studies

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# **The Creation of Moon: Comparative Analysis of Modern Sciences and Religious Studies**

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## **Abstract**

Curiosity is among the pre-eminent traits of human beings that differentiates them from other species. The majority of human beings believe in a religion that provides them with standards to be followed in this world and knowledge about the hereafter. Holy scriptures as a source of guidance also provide profound knowledge about the universe, its beginning and end, its solar and lunar systems, orbits and functions and other aspects. Modern science and its discoveries sometimes contradict the premises mentioned in religious theology, which need a rational outlook acceptable to the people with a scientific approach along with a theological perspective. In Islamic cosmological perspective, it is believed that Allah Almighty made two stars in the early days for the planet earth. The moon was also a shining star emitting light from the day first. It was a source of light by itself, not merely reflecting the light of the sun. In parallel to these divine theories, various scientific theories also explain the creation of the moon. Prominent among these are the Giant Impactor, Co-Accretion, and the Capture theory. The present research fills the knowledge gap and provides concrete and rationalized information regarding the creation of the moon in religion and modern science.

**Keywords:** creation of moon in Islam, Astrophysics in Islam, cosmic studies in the holy Qur'ān and Bible, evolution of moon and Universe

## **Introduction**

It is known that each creation of God is associated with some natural processes attesting the premise of one creator. He as an absolute power maintains the authority to create any universe at any time. However, the laws of nature show that He has made the

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things in certain sequential order following the cause and effect principles. He has created everything within pertinent time and procedure so that humans may recognize the creator behind it. Plants require seeds to grow but water and sunlight are also required for the growth and life of a plant. Similarly, micro to macro changes occurring in the world are based on the phenomenon of cause and effect. Whether it be a microorganism or a macro giant, a certain natural pattern and a system of creation exists. Similar rule is evident in the cosmological spheres where the universe is witnessing the planets and supernatural galaxies, comets, asteroids, stars, and dwarf planets orbiting in their given directions. The spectacular mechanism of the universe comprises numerous creations. Earth is the most important planet located in the spiral arm of the Galaxy and the only eco-friendly planet compatible with the existence of human life. It contains air with an optimum proportion of gases, liquid water, and solid land ensuring the survival of human life.

It is scientifically proven that the bio-equilibrium of the Earth depends on the different contributing factors. Although, in cosmological studies, the presence of the Sun holds a significant place but the Moon cannot be underestimated because it is also an important creation, shielding the Earth from various disasters by maintaining the position in its orbit.<sup>1</sup> Therefore, the Moon is very important topic in both religion and science. These interests produced different natural and unnatural processes to define its creation. However, there are many references regarding evolution of the Moon in religious studies. Unfortunately, religion experts do not incorporate science studies in the interpretation of phenomena whereas scientific studies do not effectively utilize the available resources in different religions, thereby creating a void between religious and scientific studies. The present study fills the gap with an interdisciplinary approach of religious-cum-scientific evidence and provides concrete theoretical evidence about creation of the Moon and the relevant information. The Holy Qur'ān says about cosmic research as: "We will show them our signs in the horizons and within themselves until it becomes clear to them that it is the truth."<sup>2</sup>

## 2. The Creation of Moon

### 2.1. Scientific Theories

The Study about the Moon holds a significant place in cosmological research since ancient times although it was done comparatively in relation to the Sun. In the subsequent section, we present three main scientific theories and hold a comparative analysis with Islamic theories.

#### 2.1.1. Theory 1: Giant Impactor

It is widely accepted that the mass of the Moon was once a part of the Earth. In December 1998, around 130 scientists from different countries of the world gathered in

<sup>1</sup>Joseph L. Spradley, "Ten Lunar Legacies: Importance of the Moon for Life on Earth," *Perspectives on Science and Christian Faith*, Volume 62, Number 4 (December 2010): 269.

<sup>2</sup>Al-Qur'ān: Fussilāt 41:53.

California to pool scholarly outlooks about the creation of the Moon and concluded on a concerted opinion as giant impact.<sup>3</sup> This theory was initially proposed in 1975 by William K. Hartmann and Donald R. Davis that the Moon was formed as the result of collision from a giant impact onto the proto-Earth.<sup>4</sup> According to him, a Mars-sized impactor hit the proto-Earth and created a disk around the planet from which the Moon was created. This theory got consideration due to empirical results as the mass of the Moon is due to its iron depletion and angular momentum. However, the given theory failed in explaining the similar isotopic ratios of the Earth and the Moon.<sup>5</sup> It is typically imagined that the extracted disk should derive its major features from its impactor (*Theia*) while the Moon's ratios are similar to the Earth<sup>6</sup> like oxygen, silicon, and titanium.<sup>7</sup> The isotopic similarity between the Earth and the Moon is a theory badly challenged because it does not yield any empirical findings and has not yet been proven.<sup>8</sup>

### 2.1.2. Theory 2: Co Accretion

Giant Impactor theory is led by Robin Canup, she suggested in 2001 that the formation of the Moon started near the end of the Earth's accretion.<sup>9</sup> However, the essence of giant Impactor is also dominant in the aforementioned research of Robin Canup.<sup>10</sup> She has provided simulation and experimental research to prove the physical correlation of lunar creation with Hartman's theory. However, the similarity of isotopic ratios is still unspoken. To overcome these problems Ćuk and Steward suggested in 2012 that a small-sized impactor partially accreted in collision whereas the major erosion was from proto-Earth,

<sup>3</sup>G. Jaffrey Taylor, "Origin of the Earth and Moon," *Hawai'i Institute of Geophysics and Planetology* (1998): 1. <http://www.psrcd.hawaii.edu/Dec98/OriginEarthMoon.html>

<sup>4</sup>William K. Hartmann, and Donald R. Davis, "Satellite-Sized Planetesimals and Lunar Origin," *ICARUS* 24, 504-515 (1975): 504.

<sup>5</sup>U. Wiechert, A. N. Halliday, D. C. Lee, G. A. Snyder, L. A. Taylor and D. Rumble, "Oxygen Isotopes and the Moon-Forming Giant Impact," *Science* 294 (5541), (2001): 345. doi:10.1126/science.1063037

<sup>6</sup>Steven J. Desch, and G. Taylor, "Isotopic Mixing due to Interaction between the Proto Lunar Disk and the Earth's Atmosphere," 2566 - (2013): 1.

<sup>7</sup>Miki Nakajima, "Origin of the Moon," *California Institute of Technology, Pasadena, California*, (2016): 08.

<sup>8</sup>Junjun Zhang, Nicolas Dauphas, Andrew M. Davis, Ingo Leya and Alexei Fedkin, "The Proto-Earth as a Significant Source of Lunar Material," *Nature Geo Sci* 5, 251-255 (2012): 251. doi:10.1038/ngeo1429

<sup>9</sup>Robin M. Canup, Erik Asphaug, "Origin of the Moon in a Giant Impact near the end of the Earth's Formation," *Nature* 412, (2001): 708; Robin M. Canup, "Simulation of a Late Lunar-Forming Impact," *ICARUS* 168 (2004): 433.

<sup>10</sup>Robin M. Canup, "Forming a Moon with an Earth-like Composition via Giant Impact," *Science Express* (October 2012): 1. doi: 10.1126/science.1226073.

therefore, the similarity between the Earth and the Moon could be resolved naturally.<sup>11</sup> While Robin Canup proposed that the mystery of isotopic differences could only be explained by the composition of the Venus as we do not know very much about the Venus. The assumption that the impactor is dissimilar from the composition of the Earth and can only be resolved by mission Venus. If the trio (Earth, Moon, and Venus) has been found similar then isotopic objection will be buried forever.<sup>12</sup>

Mukesh Gupta the Canadian scientist has contradicted giant impact and the co-accretion theory. He has suggested that both theories cannot be exercised with the orbital dynamics. The similarity between the geochemical compositions of the Earth and the Moon cannot occur incidentally.<sup>13</sup> He objected that why did the planet from another orbit collide with proto-Earth? If the formation of all planets was not complete at the time of giant impact, then where did the giant planet, the mass of proto-Earth, originate from? If Mars-sized planet collided with Earth head-on then why newly formed giant object (Moon) did not distract from its orbit; either it should have left Sun's orbit or should be a new planet like the Earth. If a giant impact is necessary for the formation of a new Moon, then where the Moons of other planets come from -- did they also collide with some Giant impact?

However, Mukesh Gupta suggests that a new Moon cannot be formed in a fully-grown solar system. He adds that the creation of the Moon started from the same gaseous clouds which initiated the creation of Earth and other planets. The creation of the Moon was purely a physical phenomenon since chemical processes start where some physical entity exists.<sup>14</sup>

### 2.1.3. Theory 3: Capture Theory

Another group of researchers thinks that the Moon was created before the Earth.<sup>15</sup> However, it has completed its formation somewhere else in the universe. The freely moving Moon passes close to the Earth more than one time slowing down the movement of the former due to the gravitational forces of the Earth. Thereafter, it has steadily set the position of the Moon to flow in its orbit.<sup>16</sup> Conclusively, this theory is not very productive

<sup>11</sup>Matija Čuk, and Sarah T. Stewart, "Making the Moon from a Fast-Spinning Earth: A Giant Impact Followed by Resonant Despinning," *Science* 338 (6110), (2012): 1048 doi:10.1126/science.1225542.

<sup>12</sup>Robin M. Canup, "Lunar Conspiracies," *Nature* 504 (2013): 29.

<sup>13</sup>Mukesh Gupta, "Formation of the Moon: A New Mechanism," (*arXiv*, January 31, 2014): 02-03.

<sup>14</sup>*Ibid.*, 2.

<sup>15</sup>Muhammad Ibrahim Ahmed, *Al Qamar* (Cairo: Dar ul Shūrooq, 1973), 4-5.

<sup>16</sup>Lunar Origin, <http://lunarorigin.com/?s=capture> date of access: 26<sup>th</sup> August, 2020; S. Fred Singer, "Origin of the Moon by capture," *Origin of the Moon; Proceedings of the Conference, Kona, HI*, October 13-16, 1984 (A86-46974 22-91). Houston, TX, Lunar and Planetary Institute, (1986): 477.

in understanding lunar formation because the isotopic similarity of two different creations is challenging here rather than the theory of giant impact.<sup>17</sup>

## 2.2. Religious Perspective

God has created the universe with dexterity and the explorers reach new findings on each endeavor and thus implicitly or explicitly endorse the creator. Modern and ancient scientists have provided new line of action for the researchers in different eras of history. The Earth was once imagined as a flat disc supported on the back of a giant tortoise until Aristotle observed the spherical shadow of the Earth in Moon eclipses. The falling of apple led Newton to think that each body in the universe is attracted towards every other body by a force that is stronger for massive bodies and how close are they to each other. The moving buildings inside the static environment of the train triggered Einstein the mechanism of time relativity. However, the extracted vision from *the holy Qur'ān* and *Sunnah* is relatively different from the theories of science in Moon creation. The scientific theories are needed to be filtered from religious information using the following criterion.

1. *How was the creation of our solar system initiated?*
2. *Has the Moon completed its formation before or after the Earth's accretion?*
3. *Is it possible for any planet to leave its orbit to become a part of another orbit?*
4. *What is the compositional relationship between the Moons to any other creation of space?*

### 2.2.1. The Early Development of the Universe

God is the sole creator of the entire universe and holds the power to create such kind of countless universes in just no time. He has created these all with an order and sequence. The universe was started from the state of nothing except the existence of Him. There was no restriction of time and nothing existed in any form either chemical or physical. The religious knowledge addresses that the water was created at very first, by which God has established his throne.<sup>18</sup> Then He created a pen to write the destiny of all his creatures.<sup>19</sup> Holy Qur'ān describes as: "Did the disbelievers not realize that the heavens and the Earth were one solid mass, then We tore them apart, and We made every living being out of water? Will they, then, not believe (that We created all this)?"

It is interpreted by Ibn Al Arabi, that God created the oval-shaped giant iceball. Thereafter, He exploded the ball with his glorious power which was probably placed in the center of the proposed universe. The melted water from the ball sheltered the entire

<sup>17</sup>U. Wiechert, et.al., "Oxygen Isotopes and the Moon-Forming Giant Impact," *Science* 294 (5541), (2001): 345. doi:10.1126/science.1063037.

<sup>18</sup>Hūd 11:7; 'Imād Ad-Dīn Ismā'īl Ibn Kathīr, *Al-Bidāya wa-n-Nihāya*, Vol. 1 (Bairūt: Maktaba Mu'arif, 1990), 09.

<sup>19</sup>Abū 'Abdullāh Muḥammad bin Ishāq bin Muḥammad bin Yahya bin Manda, *Kitāb at-Tawhīd*, Vol: 1 (Medina: Al-Jāmi'ah Al-Islāmiyah, 1401H), 92-93; Muslim Ibn al-Ḥajjāj Al-Nishapuri, *Ṣaḥīḥ Muslim* (Riādh: Dār un-Nashar wa-Altawzi', 2015), 848, Hadith No. 2653.

universe and the consequent explosion generated dust particles from that the planets and thus other creations of the universe were processed as well.<sup>20</sup> The religious literature also states that the creation of the universe started from the gaseous clouds that were present in the region of Milky Way.<sup>21</sup> Similarly, the generated particles from the explosion assisted in creating the planets and other essentials of the universe.<sup>22</sup>

### 2.2.2. Development of Earth before the Moon

The Earth is the first planet ever created by God. The sequence for the creation of the universe is defined in the holy Qur'ān and Hadith. "Tell them, (O Prophet): "Do you indeed disbelieve in Him and assign compeers to Him Who created the Earth in two days? He is the Lord of all beings of the universe. (After creating the Earth) He set up firm mountains on it, blessed it, and provided it with sustenance in proportion to the needs of all who seek (sustenance). All this was done in four days."<sup>23</sup>

Consequently, the mass of the Earth was formed in the first two days while the following two days were utilized in surfacing the mountains and other necessary elements on it. A saying of Holy Prophet Muhammad verifies that the Earth was created first and afterwards God created mountains to check its frequent movements.<sup>24</sup> It is further scripted in the holy Qur'ān "And indeed, a day with your Lord is like a thousand years of those which you count."<sup>25</sup> in the subsequent lines the Holy Qur'ān guides us about the creation of the skies as: "It is He Who created for you all that is on the Earth and then turned above and fashioned it into seven heavens. He knows all things."<sup>26</sup>

In this context, some of the interpreters contradict the creation of the Earth before the Heavens with the verses of the holy Qur'ān "He raised its ceiling and proportioned it .... And after that, He spread the Earth."<sup>27</sup> However, apparently, there is an intellectual contradiction in both verses, while someone has also presented the same verses to Ibn-e-Abbas (R.A) saying that: "why these verses contradict each other" Ibn-e-Abbas answered, the contradiction is in the understanding of the reader. He directed that "God created the mass of the Earth before Skies as mentioned in the holy Qur'ān and after establishing the throne on Heavens He returned to Earth to spread it by maintaining the required quantity

<sup>20</sup>Ibn Al- 'Arabī, *Futūḥāt al-Makkiyyah* (Egypt: Al Taba' Al-Bahīra, 1269), 4.

<sup>21</sup>Fussilāt 41:11.

<sup>22</sup>Ewine F. van Dishoeck, Edwin A. Bergin, Dariusz C. Lis, and Jonathan I. Lunine, "Water: From Clouds to Planets," in *Protostars and Planets VI*, ed., H. Beuther, R. S. Klessen, C. P. Dullemond, and T. Henning (Tucson: Univ. Arizona Press, 2014), 835. doi: 10.2458/azu\_uapress\_9780816531240-ch036.

<sup>23</sup>Fussilāt 41:9-10.

<sup>24</sup>Abu Abd-Allah Muhammad ibn Hakim Al-Nishapuri, *Al-Mustadrak 'alā al-Sahīhayn*, Vol-2 (Beirut: Dar Al Kutub Al-ilmiyah, 2002), 489.

<sup>25</sup>Al Hajj 22:47.

<sup>26</sup>Al Baqarah 02:29.

<sup>27</sup>An 'Naazi'aat 79:28-30.



of water, creating paths, canals and other peripheral elements that were necessary for the existing of life on it and that is meant by spreading the Earth after skies: “He completed them as seven heavens within two days and inspired in each heaven its command. And We adorned the nearest heaven with lamps and as protection.”<sup>28</sup>

Subsequently, God created Heavens and then Sun, Moon, asteroids, and comets on the day sixth. Afterward, God decorated the nearest Heaven of Earth from stars and protected it with asteroids. Once a group of Jews visited Holy Prophet Muhammad (SAW) to learn about the creation of the universe. The Holy Prophet explained the creation of the Earth, Skies, and then described that the “Sun, Moon, Stars and Angels” were created on the day sixth.<sup>29</sup> The same Hadith has been quoted by Sayuti (RH) in his Qur’ānic interpretation with a slight alteration.<sup>30</sup> The verses of the Bible also present the same stance about the creation of the universe:

In the beginning, God created the Heavens and the Earth. The Earth was without form and void, and darkness was over the face of the deep. And the Spirit of God was hovering over the face of the waters. And God said, “Let there be light,” and there was light.<sup>31</sup>

The purpose behind explaining the phases of the creation of the universe is to evaluate the scientific theories from religious studies. It is asserted that the Earth was created first in this universe. No reference is found in Islamic literature addressing the premise of collision of Earth from any planet called (*Theia*) for the creation of the Moon of the Earth. It is defined in the holy Qur’ān that God has originated this universe with water and no religious literature attests the hypothesis that the Moon was created from the Earth. The Moon has been created from the same dust particles that were generated by the explosion of a giant ice ball and this collision required arbitrary movement of the Moon on the defined path, while the Holy Qur’ān asserts open words that the Moon and the Sun have certain space lines. They both are moving towards prerecorded destiny<sup>32</sup> and had never left their orbits. These lines are eternal and constant and will never change till the end of the universe. The same perspective has been used in capture theory that the Earth has captured its Moon from some other unknown orbital system. The capture theory has contra perspective of the holy Qur’ān and simultaneously has not got much appeal in the scientific community as well. However, the other hypothesis co-accretion can be associated with the finishing of the Earth. The atmosphere has firstly started its process underwater. It was *cyanobacteria*, which splits the water and created an oxygen atmosphere through its

<sup>28</sup>Fussilāt 41:12.

<sup>29</sup>Abu Ja’far Muhammad bin Ahmed An-Nuhās, *Kitāb Al-Nāsikh wal Mansūkh* (Al-Maktaba-tul-Alamiyah, 1938), 223.

<sup>30</sup>Jalāl al-Dīn Al-Suyūfī, *Al-Durr Al-Manthūr-Fi-Tafsīr Bil-Ma'thūr*, Vol. 1 (Bairūt, Dār-ul-Fikr, 2011), 109.

<sup>31</sup>Genesis 1:1-31.

<sup>32</sup>Az Zumar 39:5.



photosynthetic activities.<sup>33</sup> This procedure required the quantity of heat which was either provided by the Sun or by the early mass of illuminating the Moon. Therefore, the co-accretion cannot be placed from the beginning of Earth. However, it can be predicted that the Earth and the Moon have completed their formation at the same time so that the existence of life on the Earth can be assured.

### 2.2.3. Creation of Two Stars

This is the tendency of the Holy Qur'ān that it does not clarify the situation dialectally rather it places the indicators for the intellectuals to understand the facts behind it. The phenomena of the creation of the Moon can be understood by the existence of two stars in one solar system. It has been reported in Hadith as: "God has created two stars of the Earth with the light of his throne."<sup>34</sup>

The Moon and the Sun have also such kind of two-star relation to the planet Earth. It is observed from the religious studies that the Moon was once a star thus it was itself a source of light not merely reflecting the light of the Sun. The research to find exhausted elements of the Moon is also reflecting the chemicals of the Moon that are commonly found on surface of the Sun.<sup>35</sup> They both were created at the same time and apart from their intensity of heat and light, they are only available to enlighten the Earth's sky from east to west. Various interpreters of the Holy Qur'ān and Hadith have revealed that the Moon was once the star that was initially created to illumine the Earth's nights. Thereby the brightness of the Moon was not borrowed by the light of the Sun. It is narrated by Hazrat Abbas: "The Moon was equally empowered to emit the light as the Sun."<sup>36</sup>

It is followed by many interpreters of the Holy Qur'ān that the Moon was created to illumine the Earth's night. The testament of Christian and the interpreter of the Jews community Louis Ginzberg<sup>37</sup> also stated that the Moon emitted its own light in its early days of evolution: "At first the Sun and the Moon enjoyed equal powers and

<sup>33</sup>Robert E. Blankenship, "How Cyanobacteria Went Green," *American Association for the Advancement of Science*, 355, No. 6332 (2017): 1372.

<sup>34</sup>Abu Al Sheikh Al Asbahani, *Kitab Al Azmat*, vol.4 (Riyadh: Darul Asima, n.d.), 1164.

<sup>35</sup>R. C. Elphic, M. Horanyi, A. Colaprete, M. Benna, P. R. Mahaffy, G. T. Delory, S. K. Noble, J. S. Halekas, D. M. Hurley, T. J. Stubbs, M. Sarantos, S. Kempf, A. Poppe, J. Szalay, Z. Sternovsky, A. M. Cooke, D. H. Wooden and D. Glenar, "The Lunar Gas And Dust Exosphere As Revealed By The LADEE Mission," *New Views of The Moon 2* (2016) 6022.pdf.

<sup>36</sup>Imād Ad-Din Ismā'īl Ibn Kathīr, *Tafsīr al-Qur'ān al- 'Azīm*, Vol-5 (Riyadh: Dār ibn Al Jauzi, 1431), 47-48.

<sup>37</sup>Book, "The Legends of Jews," is a collection of "aggadah" that comprises the exegesis of Holy Torah from the rabbis of late antiquity. Hasan-Rokem Galit, and פתח דבר. "גלית חזן-רוקם. "Preface: Legends and Folklore — Some Aspects of Louis Ginzberg's The Legends of the Jews" in a Historical and Critical Perspective." *Jewish Studies / יהדות* 47 (2010): 3. Accessed august 12, 2021. <http://www.jstor.org/stable/23383545>.

prerogatives.”<sup>38</sup>; “Let them [Sun and Moon] be for lights in the expanse of the heavens to give [emit] light on the Earth.”<sup>39</sup>

Although there is an affinity between these religious dialects and that’s how the message of Islam encompasses the wide religious community, however, there are some contradictions also exist between them. It has been narrated by the Hazrat Akrama that they were sitting along with Hazrat Abbas, and someone asked to verify the information of Ka’ab that the Moon and the Sun will be thrown to Hell, Hazrat Abbas forcefully denied this information saying that this is from the Jews which they are trying to perpetrate in Islam, (at end of the Hadith he says) “and God has created two stars [Moon and Sun] with the light of his throne.”<sup>40</sup>

#### 2.2.4. Dimness of Moon

The Sun and the Moon are from the miracles of God which He has created for the wellbeing of His creation. The Sun as a source of light is providing life ingredients on the Earth through photosynthesis and various other ways. Similarly, the Moon plays its part in nocturnal affairs and creating a balance for life on the Earth. It has been scripted in the holy Qur’ān: “And we have made the night and day two signs, and we removed the sign of the night and made the sign of the day visible.”<sup>41</sup>

The word used in verse (فمحونا) is defining the dimness of the Moon. It is interpreted that God has dimmed the symbol of the night instead of removing it permanently so that it can be signified by the symbol of light. The two creatures that existed before Adam, “Angels and Jinn,” were not given “*Sharī’ah*”. They both had direct access to Heaven and the Earth, as indicated by the dialogue among the Angels, Iblees, and God.<sup>42</sup> The concept of worship already existed among them, however, it was not restricted to certain period of time. Consequently, after the creation of Adam, the concept of darkness and light was necessarily required to introduce the *Sharī’ah* acts on the Earth. If the Moon and the Sun had kept glooming in the sky at the same time then it was hard to distinguish between day and night. The calculation between days, months, and years were also unable to be identified. The timings of fasting and religious sermons were not to be measurable. In this context it is narrated by the Holy Prophet Muhammad (SAW):

Abdullah Ibn Salam (the writer of revelation) has asked three questions to Holy Prophet (SAW) Muhammad to accept Islam ..... The third question was, what is meant by “Dimness of the Moon”? Holy Prophet (SAW) replied: They both [Sun and Moon] were emitting

<sup>38</sup>Louis Ginzberg, “The Legends of the Jews,” *The Fourth Day*, Vol-I, 23.

<sup>39</sup>Genesis 1:15.

<sup>40</sup>Muḥammad ibn Jarīr al-Ṭabarī, *Ta’rīkh al-Rusūl wa al-Mulūk*, Vol-1 (Egypt: Dār-ul-Muārif, n.d.), 65.

<sup>41</sup>Al Isra 17:12.

<sup>42</sup>Al-Baqarah 02:30-39.

light, the darkness we see in the Moon is a sign of erasure of light, and thereafter the Abdullah Ibn Salam entered in Islam.<sup>43</sup>

It is provided that the illuminating attributes of the Moon was obliterated for the availability of darkness on Earth. The information about dimness of the Moon and its mark of erasure also symbolized the true representative of the divine power. Therefore the question was made by the companion to the Holy Prophet (SAW) and made that answer the condition to enter in Islam. The Godly procedure for erasure of light from Moon is also expressed in the collection of Hadīth of Abu Al Sheikh Al Asbahani:

Once God has created all his creatures except Adam, then he created two Suns with the light of his throne, He placed one of them just in front of the Earth which was enough to lighten east and west of the universe but it was in his magnificent knowledge that he will take the power of one of them, therefore he created the one greater than the other and later He has sent the Gabriel to take the illuminating elements of the Moon (which at that time was a star) by his wings.”<sup>44</sup>

The Angel Gabriel was ordered by God to take back the power of light that is known as erasure and grant that power to the Sun so that it can be brighter enough to enlighten the east and west of the Earth. Hazrat Akrama, the companion of the Holy Prophet (SAW) has also defined this procedure in modern understanding. He narrated with reference to the Holy Prophet Muhammad (SAW), preliminary the Sun and the Moon were allocated with seventy elements to illumine the Earth. They both were equally empowered as described. Afterward, God has sent Gabriel to revoke the sixty-nine elements of the Moon and bestow those elements to the Sun. Thus the Sun became brighter than the Moon by virtue of having one hundred and thirty-nine elements while the Moon has a single element and consequent dimness.<sup>45</sup>

## 2.3. Scientific Expression on Religious Studies

### 2.3.1. Water-Based Universe

A group of scientists attests the premise of emergence of planets from the water. Presently, on each planet water is found in its different forms i.e. liquid, solid, vapor. Water is also available on comet, on young or evolved circumstellar disks, and even on the dark spots of space, where its origin remains uncertain and has also been detected in the spectra of the Sun.<sup>46</sup> The liquid form of water is only found on the Earth whereas the other forms

<sup>43</sup>Abū Bakr Aḥmad ibn Ḥusayn Ibn 'Alī ibn Mūsā Al-Bayhaqī, *Dala'il al-Nubuwwah*, Vol-6 (Bairūt: Dār Al-Kutub Al-'Ilmiyah, 1988), 260-262.

<sup>44</sup>Abu Al-Sheikh Al-Asbahāni, *Kitāb Al-'Azmat*, Vol. 4 (Riādh: Dār-ul- 'Āsima n.d.), 1164.

<sup>45</sup>Shihāb ad-Dīn Sayyid Maḥmūd Al-Ālūsī, *Rūh al-Ma'ānī*, Vol. 15 (Idāra Al-Ṭab'atīl Munīriah n.d.), 27.

<sup>46</sup>L. Wallace, P. Bernath, W. Livingston, K. Hinkle, J. Busler, B. Guo, and K. Zhang, “Water on the Sun,” *Science* 268 (5214): 1155. doi:10.1126/science.7761830

(solid and vapor) are found in lower mantle in other creations of space.<sup>47</sup> It is affirmed that the Earth has stored the water in its lower mantle in the early days of evolution.<sup>48</sup> Contrary to the Nebula theory, the water was somewhere present for the creation of all younger planets of our solar system.<sup>49</sup>

### 3. Discussion

This research work is an interdisciplinary endeavor to address the premise of the creation of Moon. We have employed the parallel perspectives from Islamic and scientific background to know about the origin of the Moon and to fill the scholarly gap that has not been well addressed in the previous researches and presented as though Islam either does not address the issue or the information provided is not scientifically well-founded. The researchers have provided a logical argument from both the perspectives i.e. of the holy Qur'ān and Hadīth and the other are the scientific premises. Religious studies well address the question of the creation of the world by a giant ice ball which also became a source of water provision to all creations. The evolution of the Moon is proposed by the collision of two objects, (Earth and *Theia*) which has erupted a quantity of hot debris. In the natural order of the creation, the disk of the Moon was completely disassociated from hydrogen in a collision<sup>50</sup> and, therefore, it was to be significantly depleted of water. While the lunar interior<sup>51</sup> and its exterior<sup>52</sup> are rich in water reserves. Legitimization of the existence of hydrogen in its lower mantle can only be justified with the deposition in its early days of evolution. The presence of water is similar to the surface of the Earth and in its lower mantle has endorsed the perspective of a water-based universe.

A few scientists have suggested that the hydrodynamic escape from the eruption was not completed or a significant amount of water was accreted to the Earth-Moon system just after the giant impactor.<sup>53</sup> While Paul Hayne has suggested that water was deposited to the

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<sup>47</sup>Thérèse Encrenaz, "Water in the Solar System," *Annual Review of Astronomy and Astrophysics*, 46 (1) (2008): 58 doi:10.1146/annurev.astro.46.060407.145229.

<sup>48</sup>Felix V. Kaminsky, "Water in the Earth's Lower Mantle," *Geochemistry International*, 56 (12), (2018): 1117. doi:10.1134/s0016702918120042.

<sup>49</sup>L. Ilse-dore Cleeves, Edwin A. Bergin, Conel M. O'D. Alexander, Fujun Du, Dawn Graninger, Karin I. Öberg, and Tim J. Harries, "The Ancient Heritage of Water Ice in the Solar System," *Science* 345 (6204), (2014):1593. doi:10.1126/science.1258055.

<sup>50</sup>Steven J. Desch, and G. Jeff Taylor, "Isotopic Mixing due to Interaction between the Protolunar Disk and the Earth's Atmosphere," 2566 (2013): 2.

<sup>51</sup>Alberto E Saal, Erik H Hauri, Mauro L. Cascio, James A Van Orman, Malcolm C Rutherford, and Reid F Cooper, "Volatile Content of Lunar Volcanic Glasses and the Presence of Water in the Moon's Interior," *Nature* 454 (7201), (2008): 192. doi:10.1038/nature07047.

<sup>52</sup>Miki Nakajima, David J. Stevenson, "Inefficient Volatile Loss from the Moon-forming Disk: Reconciling the Giant Impact Hypothesis and a Wet Moon," *Earth and Planetary Science Letters* 487, (2018): 118. doi:10.1016/j.epsl.2018.01.026.

<sup>53</sup>Alberto E Saal, et.al., "Volatile Content of Lunar Volcanic Glasses and the Presence of Water in the Moon's Interior," 194.

lunar surface by asteroid and comet impacts because, in 2009 NASA launched a satellite which not only detected the presence of water on the south pole of the Moon, but it also identified other materials that are common in comets. He further suggested that it would be possible that water was existing in the material from which the mass of the Moon was originally formed.<sup>54</sup> However, suggestions presented to legitimize the presence of hydrogen after a collision have not been scientifically proven yet.

The formation of Earth from other creations of the universe is indicated in the holy Qur'ān and Hadith. Theological perspective attests the beginning of the Earth started long ago from water and has been earlier described that the Earth has stored the water in its lower mantle in the early stages of evolution. While it has been discovered by Cleaves,<sup>55</sup> that 30% to 50% of existing water on Earth predates the age of the Sun. It signifies that the creation of the Earth was started earlier from the Sun.

### 3.1. The Probability of Two Stars in One Solar System

Islam has the narrative of two stars in the early days of our solar system. The probability for the existence of two-star in one solar system was proposed in 1988 by Richard A. Muller. He proposed that the Sun once had a star companion called "Nemesis."<sup>56</sup> However, that star does not remain anymore in our solar system as it broke free the Sun's gravity and melted into the Milky Way billions of years ago. The binary star theory also featured two stars in one solar system.<sup>57</sup> The fact is there is a possibility for the existence of two stars in one solar system. However, there are some scientific reservations that the masses of the stars to their position are relative to planet and each other. There is a high probability of unstable orbit of the planet if one of them is bigger and brighter and had a much stronger gravitational impact on the planet that one of them could pull the planet itself and if neither star's gravitation pull was strong enough, the planet would fly out into space. This is only possible that the planet orbit is just one of the star. These scientific reservations can be justified because the mass of the early star (Moon) was not much bigger to interpret the gravity of the Sun towards the planet Earth. The brightness of the Moon was also not much strengthened as compared to the mass of the Moon towards the Earth that turns the Earth into a melted planet. It is also religiously adhered to that the heat and brightness of the Moon were around 50% from the heat of the present Sun.<sup>58</sup>

<sup>54</sup>Daniel Oberhaus, "Lunar Mysteries That Science Still Needs to Solve," *wired.com* 26<sup>th</sup> August, 2020, <https://www.wired.com/story/apollo-11-lunar-mysteries-Moon-science/> date of access 26<sup>th</sup> August, 2020.

<sup>55</sup>L. Ilseore Cleaves, et.al., "The Ancient Heritage of Water Ice in the Solar System," 1593.

<sup>56</sup>Richard Muller, *Nemesis the Death Star* (London: Weidenfeld and Nicholson, 1988).

<sup>57</sup>Bradley W. Carroll, and Dale A. Ostle, "An Introduction to Modern Astrophysics," *Pearson*, Second Edition, (2014): 200.

<sup>58</sup>Shihāb ad-Dīn Sayyid Maḥmūd Al-Ālūsī, *Rūḥ al-Ma'ānī*, Vol. 15 (Idāra Al-Ṭab'atīl Munīriah n.d.), 27.

### 3.1.1. Moon: Dimness of Shining Star

The philosophy of the dimness of Moon can be associated with the research published in 2019 by NASA scientists Prabal Saxena.<sup>59</sup> He explained that we do not know very much about the early stages of the Sun. It is still a mystery that how much faster the rotation of Moon was. However, this mystery can be resolved by understanding the frequency of Coronal Mass Ejection (CME). It is the eruption of a large quantity of matter and electromagnetic radiation into space from the surface of the Sun. These CME's directly incident to the Moon and affected it rather than any other planet of the solar system. The study shows that the Moon lost its total material during these frequent volatile CMEs.<sup>60</sup> The Moon has eventually exospheres all its elements by CME that are common in the Sun such as Helium, Neon,<sup>61</sup> a quantity of hydrogen, sodium, and potassium from its surface.<sup>62</sup>

The loss of material from the surface of the Moon did not occur rapidly while it has taken a massive time in releasing its elements. This exosphere can be considered a Godly procedure and transfer of power in a regular way according to certain laws. One of them (Moon) is releasing its elements same as the other star (Sun) is getting stronger in strength. The Sun was a slow rotator in its early stages and the temperature of the young faint Sun was not enough to provide requisite heat and light. The Sun was much dimmer than today and the heat of the early Sun is estimated at around 70% from the day present. Unfortunately, the heat was not even enough to prevent the Earth from covering it with glaciers at the same time.<sup>63</sup> Despite it, the surface of the Earth was not covered by glaciers and it was probably the Moon that was the source of heat and light for the Earth. The Moon was the additionally provided star to Earth until the giant star Sun had completed its formation.

<sup>59</sup>Prabal Saxena, Rosemary M. Killen, Vladimir Airapetian, Noah E. Petro, Natalie M. Curran, and Avi M. Mandell, "Was the Sun a Slow Rotator? Sodium and Potassium Constraints from the Lunar Regolith," *The Astrophysical Journal*, 876 (1), L16. (2019):3. doi:10.3847/2041-8213/ab18fb

<sup>60</sup>W. M. Farrell, J. S. Halekas, R. M. Killen, G. T. Delory, N. Gross, L. V. Bleacher, D. Krauss-Varben, P. Travnicek, D. Hurley, T. J. Stubbs, M. I. Zimmerman, and T. L. Jackson, "Solar-Storm/Lunar Atmosphere Model (SSLAM): An Overview of the Effort and Description of the Driving Storm Environment," *Journal of Geophysical Research: Planets*, 117 (E10), (2012):8. doi:10.1029/2012je004070

<sup>61</sup>R. C. Elphic, M. Horanyi, A. Colaprete, M. Benna, P. R. Mahaffy, G. T. Delory, S. K. Noble, J. S. Halekas, D. M. Hurley, T. J. Stubbs, M. Sarantos, S. Kempf, A. Poppe, J. Szalay, Z. Sternovsky, A. M. Cooke, D. H. Wooden and D. Glenar, "The Lunar Gas And Dust Exosphere As Revealed By The LADEE Mission," *New Views of The Moon* 2 (2016) 6022.

<sup>62</sup>Prabal Saxena, Rosemary M. Killen, Vladimir Airapetian, Noah E. Petro, Natalie M. Curran and Avi M. Mandell, "Was the Sun a Slow Rotator? Sodium and Potassium Constraints from the Lunar Regolith," *The Astrophysical Journal* 876 (1), L16. (2019):1. doi:10.3847/2041-8213/ab18fb.

<sup>63</sup>Chalres Q. Choi, "How early Earth Kept Warm despite Faint Sun," (Space.com) <https://www.space.com/19118-early-Earth-atmosphere-faint-Sun.html> date of access 26th August 2020.



#### 4. Conclusion

The origin of the lunar formation has been discussed in the light of three different scientific theories by making a comparative analysis with the Islamic perspectives. However, the researchers found that a difference exists in scientific hypothesis and the religious knowledge shared in the religious studies. Similarly, the religious studies endorse that the Moon is moving in its position since the day first. It has never left its position to collide or to become a part of another orbit system. However, some most recent scientific discoveries and religious studies notify that two stars were hovering on the sky and early mass of the Moon was equally empowered to brighten the Earth as the Sun. It was in the knowledge of God that in the presence of two stars (Sun and Moon) phenomena of day and night were not possible on Earth. Therefore the light of one of them was obliterated.

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